Having described the invention, the following is claimed:

1. A system for selectively generating training data for a pattern recognition classifier from a plurality of training images representing an output class, said system comprising:

an image synthesizer that combines the plurality of training images into a class composite image;

a grid generator that generates a grid pattern representing the output class from the class composite image; and

a feature extractor that extracts feature data from the plurality of training images according to the generated grid pattern.

2. The system of claim 1 wherein the grid generator generates the grid pattern according to at least one attribute of interest associated with the class composite image.

3. The system of claim 1 wherein the grid pattern divides the class composite image into a plurality of sub-images, the feature extractor extracting data relating to each of the plurality of sub-images.

4. The system of claim 3 wherein the grid generator operates according to a grid generation algorithm to select one of the plurality of sub-images according to an attribute of interest and modifies the grid pattern according to the identified sub-image.

5. The system of claim 4 wherein the attribute of interest is a maximum average grayscale value out of a plurality of average grayscale values associated with respective sub-images.

6. The system of claim 4 wherein the attribute of interest is a maximum grayscale variance out of a plurality of grayscale variances associated with the respective sub-images.

7. The system of claim 4 wherein the grid pattern modifies the grid pattern as to divide the selected sub-image into a plurality of sub-images.

8. The system of claim 7 wherein the grid pattern is iteratively modified until a grid pattern that divides the class composite image into a threshold number of sub-images has been generated.

9. The system of claim 1, further comprising a pattern recognition classifier that is trained using the extracted feature data.

10. The system of claim 9 wherein the pattern recognition classifier includes at least one of a neural network and a support vector machine.

11. The system of claim 1, further comprising an image source that provides the plurality of training images.

12. The system of claim 11 wherein the image source includes a stereo camera.

13. A system for selectively generating training data for a pattern recognition classifier associated with a vehicle occupant safety system comprising:

a vision system that images the interior of a vehicle to provide a plurality of training images representing an output class;

a grid generator that generates a grid pattern representing the output class from a class composite image; and

a feature extractor that extracts training data from the plurality of training images according to the generated grid pattern.

14. The system of claim 13, further comprising an image synthesizer that combines the plurality of training images to provide the class composite image.

15. The system of claim 13 wherein the plurality of training images representing the output class includes images of a human adult seated within the vehicle interior.

16. The system of claim 13 wherein the plurality of training images representing the output class includes images of a rearward facing infant seat positioned within the vehicle interior.

17. The system of claim 13 wherein the plurality of training images representing the output class includes images of a human head.

18. The system of claim 13, the vision system comprising a stereo vision system that produces three-dimension image data of the vehicle interior as a stereo disparity map.

19. A method for selectively generating training data for a pattern recognition classifier from a plurality of training images representing a desired output class, said method comprising the steps of:

generating a representative image that represents the output class;

dividing the representative image according to an initial grid pattern to form a plurality of sub-images;

identifying at least one sub-image formed by said grid pattern having at least one attribute of interest;

modifying said grid pattern in response to the identified at least one sub-image having said at least one attribute of interest so as to form a modified grid pattern; and

using the modified grid pattern to extract respective feature vectors from the plurality of training images.

20. The method of claim 19 wherein the step of generating a representative image includes combining the plurality of training images to form a class representative image.

21. The method of claim 19, where the step of generating a representative image includes averaging grayscale values across corresponding pixels in the plurality of training images.

22. The method of claim 19, wherein the step of modifying the grid pattern includes modifying the grid pattern to divide the identified sub-images into respective pluralities of sub-images.

23. The method of claim 19 wherein the at least one attribute of interest includes an average grayscale value associated with a sub-image that exceeds a threshold value.

24. The method of claim 19 wherein the at least one attribute of interest includes a coarseness measure associated with a sub-image exceeds a threshold value.

25. The method of claim 19 wherein the at least one attribute of interest includes a maximum average grayscale value out of a plurality of average grayscale values associated with respective sub-images.

26. The method of claim 19 wherein the step of using the modified grid pattern to extract respective feature vectors from the plurality of training images includes applying the modified grid to a training image to form a plurality of sub-images from the training image and extracting at least one element associated with a respective feature vector from each of the plurality of sub-images.

27. The method of claim 19 wherein the steps of identifying at least one sub-image and modifying the grid pattern in response to the identified sub-image are repeated iteratively until a termination event is recorded.

28. The method of claim 27 wherein the termination event comprises producing a modified grid that divides the class composite image into a threshold number of sub-images.